

## DESCRIPTION OF PLATE XIII.

- Fig. 1. The septa, base, and synapticala of *Pachyseris speciosa*. Magnified.  
 2. Diagram of section across colline: *a*, synaptical wall; *b*, synapticala; *c*, spaces between tabulate processes of columella.  
 3. *Mæandroseris Botta*. Septa and synapticala. Magnified.  
 4. The free top of a septum, showing warty ornaments. Magnified.  
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 10. Synapticala between processes of the columella.  
 11. Synapticala fused to form a short wall.  
 12. Synapticala, from above. Magnified.

MOLLUSCA OF H.M.S. 'CHALLENGER' EXPEDITION.—Part XIX.  
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Fam. BULLIDÆ, *Stol.*

## CYLICHNA.

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|------------------------------------|---|
| 1. <i>Cylichna discus</i> , n. sp. | 6. <i>Cylichna subreticulata</i> , n. sp.   |
| 2. — <i>tahitensis</i> , n. sp.    | 7. — <i>labiata</i> , n. sp.                |
| 3. — <i>crispula</i> , n. sp.      | 8. — ( <i>Volvula</i> ) <i>paupercula</i> , |
| 4. — <i>noronyensis</i> , n. sp.   | n. sp.                                      |
| 5. — <i>reticulata</i> , n. sp.    | 9. — (—) <i>sulcata</i> , n. sp.            |

## 1. CYLICHNA DISCUS, n. sp.

St. 24. Mar. 25, 1873. Lat. 18° 38' 30" N., long. 65° 5' 30" W.  
 Culebra, St. Thomas, Danish W. Indies. 390 fms. Coral-mud.

*Shell*.—Narrowly cylindrical, truncated in front like *C. alba*; brown, with a small disk-like minutely perforated top, smooth, thin, polished. *Sculpture*. Longitudinals—there are very faint and slight lines of growth. Spirals—there are some very doubtful indications of a coarse spiral structure in the texture of the shell. *Colour* milky white and glossy. *Mouth* the full length of the shell but not more, extremely narrow, with lips nearly parallel till they diverge in front, the inner lip following the slow basal

contraction, while the outer expands a very little, as is the case in *Utriculus umbilicatus*, Mont.; at the upper end is a small, narrow, but deepish rounded sinus. *Outer lip*: its edge is very straight, retreating a little quickly above and slightly in front; its direction is straight, with the very slight bend to the right spoken of above. *Top* a little contracted, rounded, with a sort of thickened pellucid disk\* which is almost perfectly horizontal, so that the whole top of the body-whorl and the upper corner of the mouth are on the same level: in the centre is a minute closed pore. *Inner lip*: there is a thin narrow glaze which thickens and expands in front: it is not expanded on the top. *Pillar* is short, slightly oblique and twisted, with a strongish defined tooth, in front of which it is rather abruptly truncate. L. 0·156. B. 0·066. Mouth at same place, B. 0·014.

*C. protracta*, Gould, is very like this in front, but rises much higher above. *C. cylindracea*, Pennant, is slightly slimmer or narrower in proportion to length, has the body-whorl a little smaller, and the mouth slightly broader, lacks the slight posterior narrowing, and is squarely truncate behind, while here the shell is rounded. The 'Challenger' species, too, quite wants the very peculiar form of the upper corner of the mouth which is characteristic of *C. cylindracea*. *C. discus* differs from *C. macra*, Wats., in being a little broader, and having a totally different top of shell and mouth. *C. alba*, Brown, of the same size, is rounder and less cylindrical, being more attenuated above especially; the mouth is extended above the top of the shell; the top of the body-whorl is more oblique and less truncated.

## 2. CYLICHNA TAHITENSIS, n. sp.

Sept. 28, 1875. Tahiti harbour, near the reefs, 20 fms.

*Shell*.—Cylindrical, thin, glassy, spirally striate from end to end, with a small body, rounded outlines, no depression nor central point at the apex, and a toothless but abruptly truncated and prominent-pointed pillar. *Sculpture*. Longitudinals—there are scarcely perceptible lines of growth. Spirals—the whole surface is covered with fine grooves not quite regular, about  $\frac{1}{200}$  in. apart, but weaker and more crowded in the middle than at either extremity. *Colour* bluish transparent glossy white. *Mouth* rather large and long. *Outer lip* has a sinus just above the body,

\* Hence its name.

rises and is angulated at the outer upper corner of the shell: from this point its edge advances and its line is slightly convex, tending in front to become straight; at the lower outer corner it is angulated, and across the base is abruptly truncate. *Inner lip* has a very thin glaze; it is flatly convex on the body, straight and elongately oblique on the *pillar*, which presents no tooth but has a thin, defined, hardly twisted edge, and is abruptly cut off in front, being there a strong prominent point. L. 0·083. B. 0·044. Mouth at same place, B. 0·007.

This is very possibly a young shell.

### 3. CYLICHNA CRISPULA, n. sp.

St. 185 b. August 31, 1874. Lat. 11° 38' 15" S., long. 143° 59' 38" E. Rain Island, Cape York, N. Australia. 155 fms. Sand, shells.

*Shell*.—Narrowly oblong, more contracted above than below, with the greatest breadth below the middle, obliquely truncate above and below, thin, translucent, glossy, very faintly spirally striate all over; the top is like that of a *Volvula*, but beside the prominent lip the axis is perforated: there is a strong pillar-tooth. *Sculpture*. Longitudinals—the lines of growth are very slight and unequal. Spirals—the whole surface is covered with very slight, superficial, fretted, rather unequal, and somewhat remote furrows. *Colour* translucent glossy milk-white. *Mouth* long and narrow above, rising and retreating at the top of the shell, widening in front, but not very large even there. *Outer lip* rises from the edge of the axial pore, and forms the top of the shell; at this point it is narrowly rounded and retreats very much, below this its edge advances and its direction is obliquely forward to the right; in front it retreats rather rapidly and sweeps freely round the base to the point of the pillar; it is a little bent in about the middle, but is very patulous on the base. *Top* is very small, and fully half of it is covered by the lip, but behind this there is a minute conical depression with a defined rounded edge. *Inner lip* is regularly arched on the body, where there is a thin glaze, which becomes thick on the pillar with a twisted sharply-defined edge. *Pillar* bears a strong, almost direct, tooth, with a well-marked broad furrow between it and the lip-edge. H. 0·16. B. 0·075. B. of mouth at same place, 0·017.

This species is deceptively like a *Volvula*. It resembles *Bulla parallela*, Gould, but is smaller, is more contracted above, and is

there minutely perforated; the tooth in front, too, is stronger, and the spiral sculpture is much finer.

4. *CYLICHNA NORONYENSIS*, n. sp.

St. 113 a. Sept. 1, 1873. Lat.  $3^{\circ} 47'$  S., long.  $32^{\circ} 24' 30''$  W. Anchorage Fernando de Noronha. 25 fms.

*Shell*.—Small, oblong, broadest below the middle, narrowing to both ends, but especially upwards, thin, transparent, and glassy, rather strongly and remotely striate spirally above and below, the narrow mouth is longer than the body, the top is conically depressed, the straight, slightly oblique, scarcely toothed pillar has behind it a minute furrow and chink. *Sculpture*. Longitudinals—there are fine hair-like lines of growth. Spirals—the middle of the shell is smooth; in front there are about eight strongish remote crimped furrows: these become rather crowded on the base; above there are about four similar furrows. *Colour* hyaline white. *Mouth* long, narrow, curved throughout its whole length. *Outer lip* rises very slightly above the body, is rounded, with a very slight angulation at the outer corner, from which point to the corner of the base it is a little flatly curved; on the base the curve is rapid, and the shell is there slightly emarginate. *Top* is small, oblique, and has a conical depression in the middle behind the lip. *Inner lip* flatly curved on the body; the pillar is almost quite straight but a little oblique in its direction; there is a very faint appearance of a tooth on it in front, and behind it is a small furrow and chink. L. 0·07. B. 0·04. B. of mouth at same place, 0·01.

This may very possibly be a young shell, but among the Bullidæ it is impossible to judge whether a solitary specimen is full-grown or not. Compared with the young of *Bulla semilævis*, Jeffr., this is much slimmer in form, with a longer and smaller body, it is more narrowed and pointed at both ends, and is much more strongly and definitely striate. Compared with the young of *B. hydatis*, L., besides these same points of distinction, there is the strong curve of the line of the mouth, which in that species is nearly straight. *Atys speciosa*, A. Ad., is in form very like, but is shorter and broader, and more contracted posteriorly; and this 'Challenger' species is not an *Atys*. Something without colour between *C. marmorata*, A. Ad., and *C. bizona*, A. Ad., would be very near. *C. luticola*, C. B. Ad., is much more cylindrical.

5. *CYLICHNA RETICULATA*, n. sp.

St. 186. Sept. 8, 1874. Lat.  $10^{\circ} 30'$  S., long.  $142^{\circ} 18'$  E.  
Wednesday Island, off Cape York. 8 fms. Coral-sand.

St. 187. Sept. 9, 1874. Lat.  $10^{\circ} 36'$  S., long.  $141^{\circ} 55'$  E.  
Near Cape York, North Australia. 6 fms. Coral-sand.

*Shell*.—Small, oblong to subcylindrical, harshly reticulated, white, with a narrow scarcely curved mouth, a lip produced posteriorly, an oblique perforated top, a subpatulous direct and oblique pillar-lip reverted on a narrow umbilicus. *Sculpture*. Longitudinals—the whole surface is scored with strong rounded furrows, which follow the lines of growth and are parted by interstices about once and a half their width. Spirals—similar to the longitudinals, but rather stronger and further apart, are spiral furrows, the intersection of which with the longitudinals cuts the surface into square reticulations. *Colour* translucent white. *Mouth* long and narrow, widening very little in front, curved a very little throughout its whole length. *Outer lip* rises above the top, bending a little in toward the perforation; in direction it is slightly curved throughout: its edge retreats somewhat above, in the middle, and in front. *Top* is small, oblique, with a slightly expressed, narrowish, thickened, harshly radiatingly scored rim, within which is a funnel-shaped perforation. *Inner lip*: a thickish glaze crosses the well-arched body and runs out on the slightly patulous, direct, oblique, prominent, and narrow-edged pillar, behind which and half covered by it is a furrow running up into the umbilicus. L. 0.11. B. 0.05. B. of mouth at same place, 0.009.

This is a remarkable species, with very exceptional sculpture. The apical pore is so choked with impacted sand that it is impossible to say if the spire be visible or not.

6. *CYLICHNA SUBRETICULATA*, n. sp.

St. 187. Sept. 9, 1874. Lat.  $10^{\circ} 36'$  S., long.  $141^{\circ} 55'$  E.  
Near Cape York, North Australia. 6 fms. Coral-sand.

*Shell*.—Small, oblong, subreticulated, white, with a narrow curved mouth, a lip slightly produced posteriorly, an oblique perforated top, a short patulous subtwisted pillar, round whose base is a slight fold, and whose edge is appressed. *Sculpture*. Longitudinals—there are irregular and not strong lines of growth. Spirals—there are coarse, but feeble, rather remote furrows which cover the whole surface. *Colour* translucent

white. *Mouth* curved, a little broader above and below than in the middle. *Outer lip* rises very little above the top, bending out, a very little yet at once, from the apical pore: it is strongly curved throughout. *Top* is small, slightly oblique, with a scarcely definite feebly scored rim, within which is a funnel-shaped perforation. *Inner lip*: a thin glaze, with an irregular edge spreads across the body, which is well rounded: round the base of the oblique pillar is a feeble furrow and fold; the lip-edge is appressed, and has behind it a very slight depression, but no umbilicus. L. 0·106. B. 0·056. B. of mouth at same place, 0·013.

This species is very like *C. reticulata*, but differs from it in that the shell is broader in proportion to length; the mouth is broader and more curved; the strongly reticulated sculpture is absent, what there is being much feebler and less regular\*, this is especially the case with the longitudinal furrows; the outer lip rises less high behind and does not lean in at all to the perforation; the edge of the top is less oblique; the pillar-lip has a fold at its base, and the lip-edge is reflected and appressed, and has no umbilicus behind it.

#### 7. CYLICHNA LABIATA, n. sp.

Oct. 6, 1874. Amboyna. 15-25 fms.

*Shell*.—Small, strong, oval, obliquely truncate above, where the apex is impressed, bluntly pointed in front, obscurely angulated above the middle, umbilicate, finely and closely striate, with a thickened lip posteriorly produced. *Sculpture*. Longitudinals—there are fine, straight, hair-like unequal lines of growth. Spirals—there are fine spiral lines, which at the top and bottom of the shell are a little strong and remote, but in all the centre part are very faint and crowded, and above the middle, where a very blunt angulation occurs, they are nearly invisible. *Colour* translucent white, with a tinge of brown, which on the outer lip and base is ochreous. *Mouth* long, curved, narrow, a little enlarged in front. *Outer lip* rises perpendicularly from the outer edge of the impressed apex, is produced posteriorly, where it bends in toward the apex, and is patulous and almost emarginate; its direction and edge-line are both somewhat flexuous; in front it is contracted in towards the pillar, forming at the point of the base a narrow, patulous, but not emarginate,

\* Hence the name.

gutter; the edge is sharp, but is strengthened a little way within by a small longitudinal rib, which is of a ruddy white colour. *Top* obliquely truncated, small, with a blunt keel round the edge of the minute, shallow, conical depression, which is half choked by the outer lip. *Inner lip*: a very thin glaze extends across the gibbously and convexly curved body; there is a slight angle at the base of the pillar, which is direct, a little oblique, hardly patulous, scarcely twisted, very narrow, most feebly toothed and truncate in front; behind the sharp edge is a small but deep umbilicus. L. 0·16. B. 0·09. B. of mouth at same place, 0·01.

This is a very peculiar form, extremely like an *Ovula* both in shape and in the thickness of the outer lip, the edge of which, however, is sharp.

8. CYLICHNA (VOLVULA) PAUPERCULA, n. sp.

St. 24. Mar. 25, 1873. Lat. 18° 38' 30" N., long. 65° 5' 30" W. N. of Culebra Island, St. Thomas, Danish W. Indies. 390 fms. Coral-mud.

*Shell*.—Small, cylindrically oblong, with a short, blunt, but pointed top, white, faintly spiralled. *Sculpture*. Longitudinals—there are fine close-set lines of growth. Spirals—the whole shell is scored with fine, shallow, remote, scarcely fretted furrows. *Colour* ivory-white. *Mouth* arched, narrow above and throughout the greater part of its length, but widening in front, where the body of the shell contracts on the base; above it rises beyond the top of the body, and in front goes slightly beyond the point of the pillar. *Outer lip* is gently curved in the middle, with a quick bend at either end; its edge seems to be nearly level, but emarginate in front. *Top* contracts rather quickly to a small central tip. *Inner lip*: a pretty distinct glaze covers the body; in front of this the narrow pillar projects somewhat obliquely, with a slight twist and prominent edge, and is rather abruptly cut off at the point; behind it lies a small furrow running up into a minute umbilical chink. L. 0·062. B. 0·03. B. of mouth at same place, 0·008.

The *V. acuta*, d'Orb. (*Bulla*), a Cuban species, is much sharper and more hunchy. *V. angustata*, A. Ad., is more cylindrical and less stumpily pointed above.

9. CYLICHNA (VOLVULA) SULCATA, n. sp.

Sept. 7, 1874. Torres Straits, N. of Australia. 3–11 fms.

St. 186. Sept. 8, 1874. Wednesday Island, Torres Straits.  
8 fms. Coral-sand.

*Shell*.—Oblong, very symmetrically curved, bluntly pointed above, and still more bluntly in front, white, very faintly spiralled, but with the centre part of the body plain. *Sculpture*. Longitudinals—there are very slight lines of growth. Spirals—at the lower end of the shell there are about ten very slight fretted spiral furrows; those above are rather sparse and irregular, those toward the point are crowded and feeble; the larger part of the shell is plain, while above are a few spirals still feebler than those in front. *Colour* translucent white. *Mouth* arched; about the middle the arch is flattened and narrowed, broadening a very little above and somewhat more in front; above it rises bluntly beyond the top of the body, and in front it just passes the point of the pillar. *Outer lip* is very little curved in the middle, but bends in toward the axis at either end; its edge retreats a little above, but only very slightly in front. *Top* is bluntly and roundly pointed. *Inner lip*: there is a small transparent pointed pad where the outer lip rises from the tip; the curve of the body is regular, but just at the base of the pillar is a slight contraction; the pillar, which has a very faint tooth at its base, is slightly oblique, and markedly twisted out to the very point; it has a flat expanded and broadening front, with a sharp reverted edge, behind which is a rather strongly marked furrow\*, but no umbilicus. L. 0·074. B. 0·034. B. of mouth at same place, 0·005.

In form this somewhat resembles *V. angustata*, A. Ad., but the sculpture is quite different. Compared to *C. acuminata*, A. Ad., the apex of the 'Challenger' species is not spike-like and the spiral striæ are stronger.

#### UTRICULUS.

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|--|-------------------------------------|
| 1. <i>Utriculus (Tornatina) leptekes</i> ,<br>n. sp. | 8. <i>Utriculus spatha</i> , n. sp. |
| 2. — (—) <i>acrobeles</i> , n. sp.                   | 9. — <i>leucus</i> , n. sp.         |
| 3. — (—) <i>avenarius</i> , n. sp.                   | 10. — <i>complanatus</i> , n. sp.   |
| 4. — (—) <i>aratus</i> , n. sp.                      | 11. — <i>tornatus</i> , n. sp.      |
| 5. — (—) <i>amboynensis</i> , n. sp.                 | 12. — <i>amphizostus</i> , n. sp.   |
| 6. — (—) <i>pachys</i> , n. sp.                      | 13. — <i>oryctus</i> , n. sp.       |
| 7. — <i>oliviformis</i> , n. sp. ?                   | 14. — <i>famelicus</i> , n. sp.     |
|  | 15. — <i>simillimus</i> , n. sp.    |

\* It is from this feature the name of the species is derived.



1. *UTRICULUS* (*TORNATINA*) *LEPTEKES*, n. sp. (*λεπτηκής*, fine-pointed.)

St. 185 b. August 31, 1874. Lat. 11° 38' 15" S., long. 143° 59' 38" E. Rain Island, Cape York, N. Australia. 155 fms. Sand, shells.

*Shell*.—Rather small, thin, oblong, cylindrical, rounded on the shoulder, very fine-pointed, with sinistral upturned apex, narrowed in front, spirally striate, with long, narrow, slowly widening mouth. *Sculpture*. Longitudinals—the lines of growth are very slight and regular. Spirals—the whole surface is scored with sharp-cut fine furrows, which are about half the width of the interstices; round the top of the whorls runs a slight but sharp-edged axial keel. *Colour* almost hyaline white from the extreme thinness of the shell. *Mouth* a little shorter than the shell, very elongately and slightly curvedly pear-shaped, rather narrow above and there channelled. *Whorls* 3, besides 1½ in the sinistral embryonic apex. *Outer lip* very gently curved; its edge-line retreats very much above and in front. *Top*: there is a very short scalar spire, in which the first regular whorl is elevated and is truncately conical, the second hardly shows above the third; in the middle rises the small sinistral, more than half-turned-over apex; the sutural canaliculation is a shallow rounded furrow, with a sharp-edged external border carinating the whorls. *Inner lip*: there is a thin but distinct labial pad; the curve of the body is convex, and contracts slowly from the top of the mouth to the front, which is not truncated: the pillar is long, oblique, with a small reverted lip and a very slight long-twisted tooth, behind which is a feeble furrow, caused by an impression made in the shell. L. 0·14. B. 0·06. B. of mouth at same place, 0·02.

This species differs from *U. acrobeles*, Wats., in its narrower form and thinner texture, in its sculpture, in its larger mouth, in its spire, its sutural canaliculation, and its apex, which is more prominent.

2. *UTRICULUS* (*TORNATINA*) *ACROBELES*, n. sp. (*ἀκροβελής*, ending in a point.)

*Shell*.—Rather small, spirally scored, oval, subcylindrical, bluntly rounded in front, with a low subscalar spire crowned with a minute prominent sinistral apex turned up on its side. *Sculpture*. Longitudinals—there are faint growth-furrows drawn at the top into short very oblique folds. Spirals—the whole

surface is scored with fine furrows, which are remote above but closer in front, where the intervening surface is rounded; a rounded keel lies below the suture. *Colour* translucent white. *Mouth* markedly shorter than the shell, straightish, clavate to pear-shaped, narrow and channelled above. *Whorls* 4, exclusive of  $1\frac{1}{2}$  of the apex, which are sinistral. *Outer lip* straight, very slightly appressed above, where it is separated from the body by the slight shallow sutural canal. *Top*: there is a short distinct subscalar spire, in which the first regular whorl hardly shows, but which is crowned with the small sinistral half-turned-over apex. *Inner lip*: there is a thin but distinct labial pad; the curve of the body is nearly straight, but is convex in front; the pillar is very oblique, broad, flat and patulous, with a very broad, scarcely twisted tooth, which is longitudinally furrowed so as almost to be double: in front of this tooth the pillar is truncated at its junction with the outer lip. L. 0·13. B. 0·055. B. of mouth at same place, 0·014.

This species differs from *U. avenarius*, Wats., in the shape of the shell and of the spire, and in the apex and pillar. *U. canaliculatus*, Say, is much stumpier and has a lower spire. The up-turned apex is like that of *Odostomia lactea*, Linn.

### 3. UTRICULUS (TORNATINA) AVENARIUS\*, n. sp.

April 17, 1874. Port Jackson, Sydney. 2–10 fms.

*Shell*.—Oval, rounded bluntly in front and sharply above, where the papillary apex projects, smooth, angulated above round the outside of the channelled suture, with a strongly toothed, twisted, and oblique pillar and a smallish mouth, which is shorter than the shell. *Sculpture*. Longitudinals—there are faint rounded furrows on the lines of growth. Spirals—on the upper part of all the whorls there seem to be close-set very faint spirals; about the middle of the whorl they become stronger, like very fine remote furrows; a bluntly angulated keel projects axially below the suture. *Colour* translucent white. *Mouth* a good deal shorter than the shell, conically clavate, slightly curved, a little blunt at the top. *Whorls* 4 to  $4\frac{1}{2}$ , angulated above; each rises distinctly above the one which follows. *Outer lip* almost appressed above, but separated by the deep sutural channel which runs into the top of the mouth: in front it is very

\* So called from its having somewhat the appearance of a grain of oats.

patulous, and obliquely truncate backwards; in the middle it is slightly contracted. *Top*: the whole upper part of the shell contracts, and the spire is roundly conical and subscalar, with the glossy round papillary apex rising slightly above all: it is scored with the sutural canal, which is narrow and not deep, but well defined by the sharp keel which lies below it. *Inner lip*: there is a thick prominent labial pad; the curve of the body is convex, and so passes on regularly to the point of the pillar, which is very oblique and carries a strong, twisted, oblique, longitudinally furrowed tooth; between this tooth and the body is a very small furrow. H. 0·22. B. 0·1. B. of mouth at same place, 0·02.

This species a good deal resembles, not the *U. turritus*, Möll., but Sowerby's figure of that species in the 'Thesaurus,' pl. cxxi. f. 28. In perfectly fresh specimens the spiral furrows, which I have described as very faint, may be distinct; but in the ten 'Challenger' specimens they are only traceable with certainty near the edge of the labial pad. *U. canaliculatus*, Say, is a much smaller and stumpier form, much broader above, with a minute apex turned over on its side.

#### 4. UTRICULUS (TORNATINA) ARATUS, n. sp.

St. 188. Sept. 10, 1874. Lat. 9° 59' S., long. 139° 42' E. W. of Cape York, off S.W. point of Papua. 28 fms.

*Shell*.—Small, oblong, truncated at the top, rounded in front but not truncated, with whorls sharply angulated above and furrowed spirally from end to end\*, a channelled suture, a papillary apex, a longish, concave, toothed, and furrowed pillar, and a small mouth. *Sculpture*. Longitudinals—the lines of growth are very feeble. Spirals—from end to end the shell is scored with small but distinct furrows, which on the front of the shell are rounded, but above are sharper, shallower, and fretted; they are parted by flattish surfaces of double their width in front, but much more than this above, where the furrows are slighter: round the top of each whorl runs a sharp up-standing keel, within which lies the deepish and narrow, but at bottom rounded, sutural canal. *Colour* ivory-white, with a dull gloss. *Mouth* barely shorter than the shell, narrow, curved, slowly enlarging, elongately pear-shaped. *Whorls* barely 3. *Outer*

\* Hence the name.

*lip* almost appressed above, but separated by the sutural canal; it does not rise quite to the top of the shell, it is very slightly arched, and the edge is scarcely curved, and is hardly emarginate in front. *Top*: the shell is narrowed and then sharply and flatly truncate; round the edge and coiling in to the centre is a sharp but not expressed keel; the whole interval between the keel of one whorl and that of the next is occupied by the sutural canal, which has a convex slope on the interior side, a rounded bottom, and a perpendicular face on the exterior whorl; the central tip is a (relatively) large, glossy, translucent, flatly rounded prominent dome. *Inner lip*: there is a very thin glaze across the slightly arched body; round the base of the straightish concave pillar coils a strongish tooth, minutely furrowed longitudinally, and with a sharp twisted inner edge; outside the tooth-edge is a strong furrow with a minute umbilical chink. H. 0·083. B. 0·041. B. of mouth at same place 0·011.

This species very much resembles the following, but may at once be distinguished by the top.

5. *UTRICULUS (TORNATINA) AMBOYNENSIS*, n. sp.

Oct. 6, 1874. Amboyna. 15-25 fms.

*Shell*.—Small, oblong, truncated at the top and a little so in front, with whorls sharply and expressedly angulated above, and very faintly spiralled, a channelled suture, a minute regularly incoiled apex, a shortish, oblique, toothed, and feebly furrowed pillar, and a small mouth. *Sculpture*. Longitudinals—the lines of growth are barely visible. Spirals—a little way below the middle a minute and very shallow furrow is found; below this, at about five times the breadth of the furrow, is another similar, then at half the distance below is another furrow, after which others succeed, becoming more crowded and slightly stronger on to the point of the shell; above there are none of these furrows, only round the top of the whorls runs a sharp keel expressed by a rounded furrow on its outer side and by a deeper and stronger furrow on its inner side. *Colour* translucent glossy white. *Whorls*  $3\frac{1}{2}$ . *Mouth* barely the length of the shell, narrow, straight, small, enlarging quickly, but to no great extent. *Outer lip* rather thick, almost appressed above, but separated from the body by the sutural canal; it reaches the top of the shell, but retreats a good deal at this part; its edge line is curved and it is contracted at the middle, in front the

edge retreats and is subemarginate on the base, where it is considerably thickened by the extension of the pillar-tooth, which is continued round the front within the edge of the lip, and separated from the edge by a minute furrow. *Top*: the shell is slightly contracted, and then sharply and flatly truncate; round the edge and coiling in to the centre is a sharp, expressed keel, the whole interval between one keel and the next is occupied by the deep, perpendicular-faced sutural canal, the horizontal top of the whorl, and the extracarinial furrow; the apex is perfectly flat, and is minute and regularly in-coiled. *Inner lip*: a strongish glassy defined callus runs down the rather cylindrical body, disappears in the extracolumellar furrow, and reappears in the extreme edge of the outer lip; a strong oblique tooth twists round the base of the pillar, is flattened back on the pillar, and is continued in a small intralabral callus on the base; behind the pillar-edge is a strongish but shallow furrow, but no umbilical chink. H. 0·083. B. 0·042. B. of mouth at same place, 0·009.

This species is at first sight, and especially in rolled specimens where the sculpture is effaced, deceptively like *U. aratus*; it is really, however, quite different, and in particular the difference may at once be recognized in the top of each. The species seems considerably to resemble *B. (Tornatina) polita*, A. Ad., from Manilla, but the lip is not posteriorly produced.

#### 6. UTRICULUS (TORNATINA) PACHYS, n. sp. (παχύς, broad.)

St. 169. July 10, 1874. Lat. 37° 34' S., long. 179° 22' E. N.E. from New Zealand. 700 fms. Grey ooze. Bottom temperature 40°.

*Shell*.—Rather large, gibbously oval, being tumid in front and contracted upwards, truncated above where the edge is carinated and furrowed, with an impressed top and a papillary apex. *Sculpture*. Longitudinals—the lines of growth are few, sinuous, and very slight. Spirals—round the edge of the impressed top is a rounded keel, with an exterior strongish rounded furrow, outside of which is a narrow sharpish keel; within the apical pore the whorls are sharply keeled above the channelled suture; the only other trace of spiral striation is behind the outer lip, where the fresh shell shows some trace of a spiral texture. *Colour* horny yellowish white. *Mouth* club-shaped, large, the full length of the shell, being a little produced posteriorly, shortly

curved across the body, ample in front. *Whorls* 4, the earlier ones only indistinctly visible in the impressed top; the apex is papillary. *Suture* deeply channelled, with a sharp keel above it: this keel runs out not above but on the edge of the funnel-shaped top. *Outer lip* rises from the inner side of the apical depression and slopes flatly outwards, forming thus the patulous opening of the funnel-shaped depression; at the apical keel it is angulated; from this point it makes a convex sweep, which has a slight contraction about the middle; it is patulous and somewhat elliptical in front. *Top* nearly flat, only the outer lip rises slightly above the level; the apical depression is funnel-shaped, having a wide converging mouth and a small, not deep, hole in the middle, with a papillary apex in the centre. *Inner lip*: a broadish distinct white glaze extends across the body, on which the curve of the lip is very regularly convex on to the narrow, long, low, and twisted pillar-tooth; beyond this the pillar-lip is slightly concave, narrow, a little patulous, and appressed. L. 0·23. B. 0·14. B. of mouth at same place, 0·04.

I do not know any other *Utriculus* so rounded in its outlines as this; it is also very broad relatively to its length.

#### 7. *UTRICULUS OLIVIFORMIS*, n. sp. ?

St. 73. June 6, 1873. Lat. 38° 30' N., long. 31° 14' W. West of Azores. 1000 fms. Bottom temperature 39°·4. *Globigerina*-ooze.

This large and very interesting species is in too bad condition for satisfactory description. I had called it *oliviformis* from its shape, which is peculiarly stumpy, with an excessively short and broad mouth, and an unusually high and blunt spire; it is sharply fretted all over with sharp lines, and has a strong little furrow behind the sharp-edged twisted pillar. It is like *U. culcitella*, Gould, or *U. lactuca*, Nevill, in its conical spire; and like *U. simplex*, A. Ad., in shortness of body. *Tornatina olivula*, A. Ad., is much slimmer, longer in mouth, and much more cylindrical. It differs from *Utriculus spatha*, Wats., in its greater breadth, higher spire, shorter mouth, coarser sculpture, more numerous whorls, and more abrupt truncation in front, where the shell is cut off almost at right angles to the axis. L. 0·32. B. 0·17. L. of mouth 0·2; B. 0·05.

8. *UTRICULUS SPATHA*, n. sp.

St. 24. March 25, 1873. Lat.  $18^{\circ} 38' 30''$  N., long.  $65^{\circ} 5' 30''$  W. North of Culebra Island, St. Thomas, Danish W. Indies. 390 fms. Coral-mud.

*Shell*.—Large, cylindrically oblong, gradually and slightly narrowing forwards, more abruptly so up the short stumpy and very blunt spire, thick, exquisitely reticulated, with a truncated and toothed pillar and a straight slightly contracted outer lip. *Sculpture*. Longitudinals—the whole surface is delicately and sharply scored in the lines of growth with very fine rounded furrows parted by sharper and much narrower ridges, which are about  $\frac{1}{1200}$  of an inch apart. Spirals—a little stronger than the longitudinals, which they cut across, are spiral lines very distinct above, one or two on the shoulder being even strong and remote, more delicate and similar to the longitudinals in front, and in the middle very faint indeed, only sufficient to produce a satiny sheen; round the top of the whorls below the suture is a very broad shallow furrow or slight constriction bordered by a very feeble keel below, which forms a vague shoulder. *Colour* ivory-white. *Mouth*  $\frac{5}{6}$  of the whole length of the shell, in shape somewhat clavate, being shortly broad in front, elongately conical throughout most of its length, and rapidly contracted at the top. *Whorls*  $2\frac{1}{2}$ , rounded above with a very slight concave constriction below the suture, subcylindrical in the middle and rounded in front. *Suture* linear, impressed, and very slightly horizontally margined below. *Outer lip* contracted and appressed above, so that the top of the mouth runs up to a long and very narrow point, bluntly angulated at the shoulder, below this it is straight, but draws in towards the axis, in front it is patulous and well rounded; the edge line is convex, and retreats very rapidly in front, where the shell is abruptly truncate. *Top* very bluntly rounded, the apex being to some extent enveloped in the succeeding whorl, which rises slightly above it. *Inner lip*—a thick pad of glaze, with well-defined edge, extends down the slightly convex body, and passes with gradual sweep into the twisted subconcave pillar, which is truncate in front; at the base of the pillar the glaze is much thickened, and presents for a short distance two very oblique twisted parallel folds, which are parted by a small furrow; another furrow lies outside,

between the exterior fold and the glaze-edge. L. 0·3. B. 0·14.  
Mouth: L. 0·25; B. 0·03.

This exceedingly peculiar form in many respects recalls, rather than a *Utriculus*, one of the long narrow low-spired *Marginellas*, such as *M. Nevilli*, Jouss., or *M. avena*, Kien.

9. *UTRICULUS LEUCUS*, n. sp. (λευκός, white.)

St. 73. June 30, 1873. Lat. 38° 30' N., long. 31° 14' W.  
West of Azores. 1000 fms. *Globigerina*-ooze. Bottom temperature 39°·4 Fahr.

*Shell*.—Strong, cylindrical, with a very slight upward taper, rounded at either end, with an oblique flat apex and a minute perforation round which the edge of the penultimate whorl is visible, and in the middle the sunken apex; the mouth is small and narrow, and in front abruptly truncate, with a short truncate very bluntly toothed pillar. *Sculpture*. Longitudinals—there are slight unequal furrows on the lines of growth. Spirals—the whole surface is most faintly and doubtfully marked with very feeble furrows, which are both narrow and superficial, parted by broadish flat interstices. *Colour* translucent white, with a faint brownish tinge, glossy. *Mouth* long, narrow, shorter than the shell, straight, with parallel sides, the enlargement in front sudden, but very short. *Outer lip* straight, rounded above, where it springs from the callus of the inner lip; it does not rise so high as the opposite side of the apex, which consequently is rather oblique; its edge line is slightly produced in the middle, but not bent in; in front the lip, in common with the whole shell, is very abruptly truncate, and here it sweeps round with a strong, sharp, bevelled edge to join the pillar-lip. *Top* roundly flattened down and slightly bent in round the small apical perforation, round which 1½ to 2 whorl-edges are visible. *Inner lip*: across the body runs a strongish callus, whose edge exactly corresponds with the edge of the outer lip; in front it is flatly and broadly appressed on the very stumpy pillar, round which twists a strongish but very blunt tooth. H. 0·25. B. 0·11. B. of mouth at same place, 0·03.

This species is very like *Cylichna alba*\*, Brown, but it is squarer both above and below; the obliquity of the line of the top is exactly the opposite of that in *C. alba*, where, from the outer lip rising above the top of the shell, the greatest height is at the

\* The similarity, indeed, suggested the name.



mouth; while in *U. leucus* the top is highest on the side away from the mouth.

*U. vortex*, Dall, seems to present several points of resemblance; but that species seems to taper much more toward the tip, to be differently and much more strongly sculptured, to have no pillar-tooth, and to be very much broader in proportion to length (4.25 millim. to 7.5 millim.).

The *Tornatina eximia*, Baird, has a more perfectly cylindrical form, a higher spire, and a much wider mouth.

10. *UTRICULUS COMPLANATUS*, n. sp.

St. 188. Sept. 10, 1874. Lat. 9° 59' S., long. 139° 42' E. West of Cape York, off S.W. point of Papua. 28 fms.

*Shell*.—Minute, cylindrical, truncated and flat on the top, very much and obliquely truncated in front, with whorls angulated above and furrowed longitudinally and spirally, a papillary apex, a longish pillar, and a club-shaped mouth. *Sculpture*. Longitudinals—the furrows on the lines of growth are strong and curved. Spirals—the whole surface is scored by sharp irregular furrows parted by flat intervals of about three times their width. *Colour* white. *Mouth* the full length of the shell, narrow above, oblong and roomy in front, club-shaped. *Whorls* 3; on the top of the shell they are rounded. *Suture* slightly impressed. *Outer lip* rises roundly the least thing above the top; its course is straight, with a very slight concavity; its edge is prominent. *Top* perfectly flat, with a roundly angulate edge; the individual whorls are rounded, and are parted by a somewhat impressed suture; the central tip, which is glossy, is papillary, but depressed. *Inner lip* is, on the body, slightly concave in its course; the pillar is oblique, nearly straight, and is patulous. L. 0.05. B. 0.028. Breadth of mouth at same place, 0.013.

This is a very small species, the solitary specimen of which is not in good condition. It is a good deal like *U. truncatulus*, Brug.; but the sculpture is a very marked feature of difference and the form is more stumpy.

11. *UTRICULUS TORNATUS*, n. sp.

St. VII. Feb. 10, 1873. Lat. 28° 35' N., long. 16 5 W. Teneriffe. 78 fms. Coral.

*Shell*.—Small, cylindrically oblong, a little tumid in front, slightly narrowed backwards, rounded at the shoulder, longitudinally and spirally striate, with a flat top, a small papillary

apex, and straight club-shaped mouth. *Sculpture*. Longitudinals—there are many fine, rounded, feeble lines of growth. Spirals—there are many very faint minute superficial spiral lines which owe somewhat of distinctness to the colour, and to the fact that at somewhat regular intervals there occurs one a little stronger than the rest. *Colour* transparent white, irregularly banded with unequal spiral milky stripes, which are obsolete in many specimens. *Mouth* club-shaped, the full length of the shell, long and narrow above, slightly enlarged at the top, considerably so in front by the contraction of the body-whorl at the base. *Whorls* 3, far from distinct, slightly rounded, of very gradual increase; the extreme apex is minute, but papillary. *Outer lip* rises very slightly above the flat crown, and here it is very patulous and almost emarginate; just where it begins to run forward it is very slightly expanded, from this point to the base it advances quite straight and a little inflected; on the base it is freely rounded, truncated, and patulous. *Top* is barely oblique, and the rise of the outer lip elevates that side, so that the whole top is almost flat, with more or less of a depression in the middle where the minute dome-shaped apex rises. *Inner lip*: there is a strong well-defined labial glaze which runs quite straight and continuously from the outer lip across the scarcely convex body, and passes on with a quick deflection to the left into the slightly concave, scarcely toothed, oblique, truncated pillar, where the lip is narrow, expanded, and appressed. L. 0·092. B. 0·046. B. of mouth at the same place, 0·005.

This is a species extremely abundant at Madeira, where I dredged many thousand specimens. They vary somewhat in the relation of length and breadth, and still more in the form of the crown, which is sometimes flat and broadish, with an impressed suture, at other times narrow, with a small deep opening and a very depressed apex, the suture in these circumstances being out of sight.

12. *UTRICULUS AMPHIZOSTUS*, n. sp. (*ἀμφιζώστος*, girt in.)

Sept. 8, 1874. Flinders Passage, Cape York, N. Australia.  
7 fms.

St. 186. Sept. 8, 1874. Lat. 10° 30' S., long. 142° 18' E.  
Wednesday Island, Cape York. 8 fms. Coral-sand.

St. 187. Sept. 9, 1874. Lat. 10° 36' S., long. 141° 55' E.  
Near Cape York. 6 fms. Coral-sand.

*Shell*.—Small, rather broadly cylindrical, but contracted in the middle, and broadest below the contraction, very bluntly rounded in front, longitudinally striate and very finely spiralled, with a flat but slightly depressed crown and a small papillary apex. *Sculpture*. Longitudinals—there are a great many small hair-like ridges and furrows on the lines of growth; they are nowhere strong, but are feeblest on the base. Spirals—the whole surface is very equally striated, with delicate shallow scratched lines parted by flat surfaces 4 or 5 times the width of the lines; there is a very slight and gradual constriction, most apparent near the outer lip, about the middle of the body, and in front of this the shell is slightly tumid. *Colour* translucent white, with vague trace of spiral bands. *Mouth* the full length of the shell; shaped like a racket, being oval in front, long and narrow above; it is small and rounded at the top, which just rises to the crown. *Whorls* 4, of which only the small rounded tops are seen on the crown, where they are slightly and radiatingly ridged, the last envelopes all the others. *Suture* impressed and distinct. *Outer lip* rounded at the top, where it does not rise above the crown; it runs straight and parallel to the inner lip till below the middle, where it bends outwards in exact symmetry with the corresponding bend of the inner lip on the base, forming a very regular oval curve in front; the edge line is regularly curved, retreating slightly behind and in front, and advancing in the middle where the lip is contracted. *Top* flat, but slightly depressed, with a small papillary apex in the middle, the outer edge is roundly angulated. *Inner lip* straight down the body, concave on the pillar, which has a very slight twist and a narrow patulous edge, behind which is a scarcely appreciable umbilical depression; the point of the pillar projects in front clear of the sweep of the basal curve. L. 0·12. B. 0·06. B. of mouth at same place, 0·02.

This species is very like *U. truncatulus*, Brug.; but that has much stronger longitudinals, no spirals, and its crown is oblique, sloping down from left to right, on which side the top of the mouth and outer lip rise in a rounded loop very considerably above the top of the body-whorl.

13. UTRICULUS ORYCTUS, n. sp. (ὄρυκτός, excavated.)

St. 344. April 3, 1876. Lat. 7° 54' 20" S., long. 14° 28' 20" W. Ascension Island. 420 fms. Hard ground.

*Shell*.—Subcylindrically oblong, truncate above, where the crown is sharply angulately edged and excavated, with a papillary apex, tumid below the middle and rounded in front, obsoletely striate in the lines of growth. *Sculpture*. Longitudinals—the ordinary ridges and furrows in the lines of growth are feeble, except on the crown, where the old lip-edge scars are strongish, close, and hair-like. Spirals—none, except that round the edge of the crown there runs a sharp angulation in continuation of the outer lip. *Colour* ivory-white, somewhat streaked longitudinally. *Mouth* a little longer than the body, and at the top, to a small extent, enlarged, slightly curved on the inner side, and there in front gibbous; on the outer side it is nearly straight. *Whorls* 3: the last encircles all the rest, which only appear on the crown, where each rises above its predecessor in a round-faced curve; the first is papillary and immersed, the last rises above on the margin in a sharp edge and is a little tumid in front. *Suture* slightly impressed. *Outer lip* rounded and cut off backwards above, angulated at its upper outer corner, straight with a slight median contraction, rounded and patulous in front; its edge line is very regularly curved. *Top* deeply excavated, with a sharp edge. *Inner lip*: there is a very thin glaze; the line across the body is much curved, the narrowing forward of the body beginning early and being considerable; the pillar is very oblique, subtruncate, very bluntly and faintly toothed, with a narrow expanded sharpish-bordered edge, and an almost imperceptible umbilical chink behind it. L. 0·13. B. 0·07. B. of mouth at same place, 0·01

The very sharp outer rim of the crown in this species is characteristic. The species slightly resembles a large and stumpy *U. (Cyllichna) umbilicatus*, Monterosato, but is posteriorly squarer and more truncate, the whole top is different, the line of the pillar is straight in its obliquity, not roundly hollowed, and there is no spiral sculpture.

14. *UTRICULUS FAMELIOSUS*, n. sp.

July 29, 1874. Levuka, Fiji. 12 fms.

*Shell*.—Long, narrow, subconically cylindrical with straight outlines, abruptly truncate above, with a deeply impressed papillary apex, and rounded slightly tumid in front, harshly striate above and delicately so below. *Sculpture*. Longitudinals—the lines of growth are very slight, but round the top of the

shell is a coronal of folds forming ridges and furrows of about equal strength; these extend over the top and into the hollow crown. Spirals—round the top, harshly scoring the coronal, are 4 or 5 deep, but not broad, sharp-cut furrows, parted by flat surfaces of about twice their breadth; below these, to a fourth of the length, there are distant furrows so obsolete as to be almost invisible; below this the whole surface is superficially scratched with delicate sharp-cut fretted furrows parted by broadish flat intervals. *Colour* translucent white. *Mouth* the entire length of the shell, being considerably produced posteriorly, where it is slightly enlarged; in the middle it is narrow, the two sides being almost perfectly parallel, in front it is elongately oval; in its entire shape it resembles a spoon. *Whorls* 4, but the earlier ones are so deeply sunken, and the hole in the crown (where alone they are visible) is so small, that it is difficult to count them; the apex is papillary. *Suture* slight. *Outer lip* rises straight from the crown, with a slight inclination in towards the centre, is narrowly rounded above, and advances straight for about two thirds of the shell's length, at which point it is slightly expanded, and then becomes somewhat patulous; it sweeps rather freely round to join the pillar. *Top* small, oblique, harshly radiatingly striate and deeply narrowly impressed. *Inner lip* long and straight, slightly convex in front, oblique and slightly concave on the pillar, which is bluntly toothed in front, and has a very narrow scarce patulous prominent edge with a minute furrow behind it. L. 0·18. B. 0·06. B. of mouth at same place, 0·019.

This species, whose thin and famished look suggested the name chosen, belongs to the group of which the Mediterranean *U. striatula*, Forb., may be taken as a type, though in that the features attributed to the subgenus *Sao* (of *Cylichna*) are much more strongly developed. Compared to this species of the 'Challenger,' *Cylichna fijiensis*, E. Sm., is broader, not squarely truncate above, and not so plicate round the top of the body. *U. phiala*, A. Ad., from Japan, is not nearly so long and narrow, and is more cylindrical. *Cylichna decussata*, A. Ad., which is like in sculpture, is shorter, less cylindrical, and the outer lip rises much higher behind. *C. pyramidata*, A. Ad., which is puckered above, is much less cylindrical and is smooth in the body.

15. *UTRICULUS SIMILLIMUS* \*, n. sp.

Sept. 7, 1874. Torres Straits, North of Australia. 3-11 fms.

Sept. 8, 1874. Flinders Passage, Cape York, North Australia. 7 fms.

St. 186. Sept. 8, 1874. Lat.  $10^{\circ} 30'$  S., long.  $142^{\circ} 18'$  E. Wednesday Island, Cape York, North Australia. 8 fms. Coral-sand.

*Shell*.—Small, short, truncately conical, with straightish outlines, a perforated crown, and a small papillary apex, rounded and tumid in front. *Sculpture*. Longitudinals—the lines of growth are very slight; but round the top of the shell is a coronal of delicate folds forming ridges and furrows of about equal strength; these extend over the top and into the perforation of the crown. Spirals—round the top is a slight but marked constriction; above this the top converges, and is finely scored with small close-set furrows; the rest of the shell is superficially scratched with delicate, sharp-cut, fretted, remote furrows parted by flat surfaces: on the base the furrows are closer and coarser, and the intervals rounded. *Colour* translucent white. *Mouth* the entire length of the shell, being considerably produced posteriorly, where it is enlarged; in the middle it is narrow and slightly bent, in front it is large and oval. *Whorls* 3 to 4; the apex is papillary, but very small, and so deeply immersed as to be doubtfully visible. *Suture* very difficult to distinguish, but apparently impressed. *Outer lip* rises from the inner side of the perforation and bends in over it, so as partially to cover it: it arches freely round and is not at all emarginate; for about three fifths of its length it runs pretty straight forward, at this point it is slightly constricted, and contracted, but immediately bends to the right and curves very regularly round the base, where it is patulous. *Top* contracted, rounded, oblique, harshly radiatingly striate, and deeply narrowly impressed. *Inner lip* convex, tumid in front, oblique and slightly concave on the pillar, which is feebly toothed, and has a very narrow, scarcely patulous, prominent edge, with a minute furrow behind it. L. 0.1. B. 0.047. B. of mouth at same place, 0.024.

This species greatly resembles the young of *U. famelicus*, Wats., but is very much broader in proportion to its length. *Cylichna fijiensis*, E. Sm., is much larger and slimmer.

\* So called from its resemblance to the young of *U. famelicus*, Wats.